Pilot Evaluation Plan

Mentoring for Early Career Chemistry Teachers

Evaluator: National Foundation for Educational Research

PROJECT TITLE	**Mentoring for Early Career Chemistry Teachers**
DEVELOPER (INSTITUTION)	Royal Society of Chemistry
EVALUATOR (INSTITUTION)	National Foundation for Educational Research
PRINCIPAL INVESTIGATOR(S)	Suzanne Straw
EVALUATION PLAN AUTHOR(S)	Suzanne Straw and Matt Walker
PUPIL AGE RANGE AND KEY STAGE	Intervention is focused on teachers in secondary schools
NUMBER OF SCHOOLS/ SETTINGS	Up to 80 (mentors from up to 40 schools and mentees from up to 40 schools)
NUMBER OF PUPILS	N/A

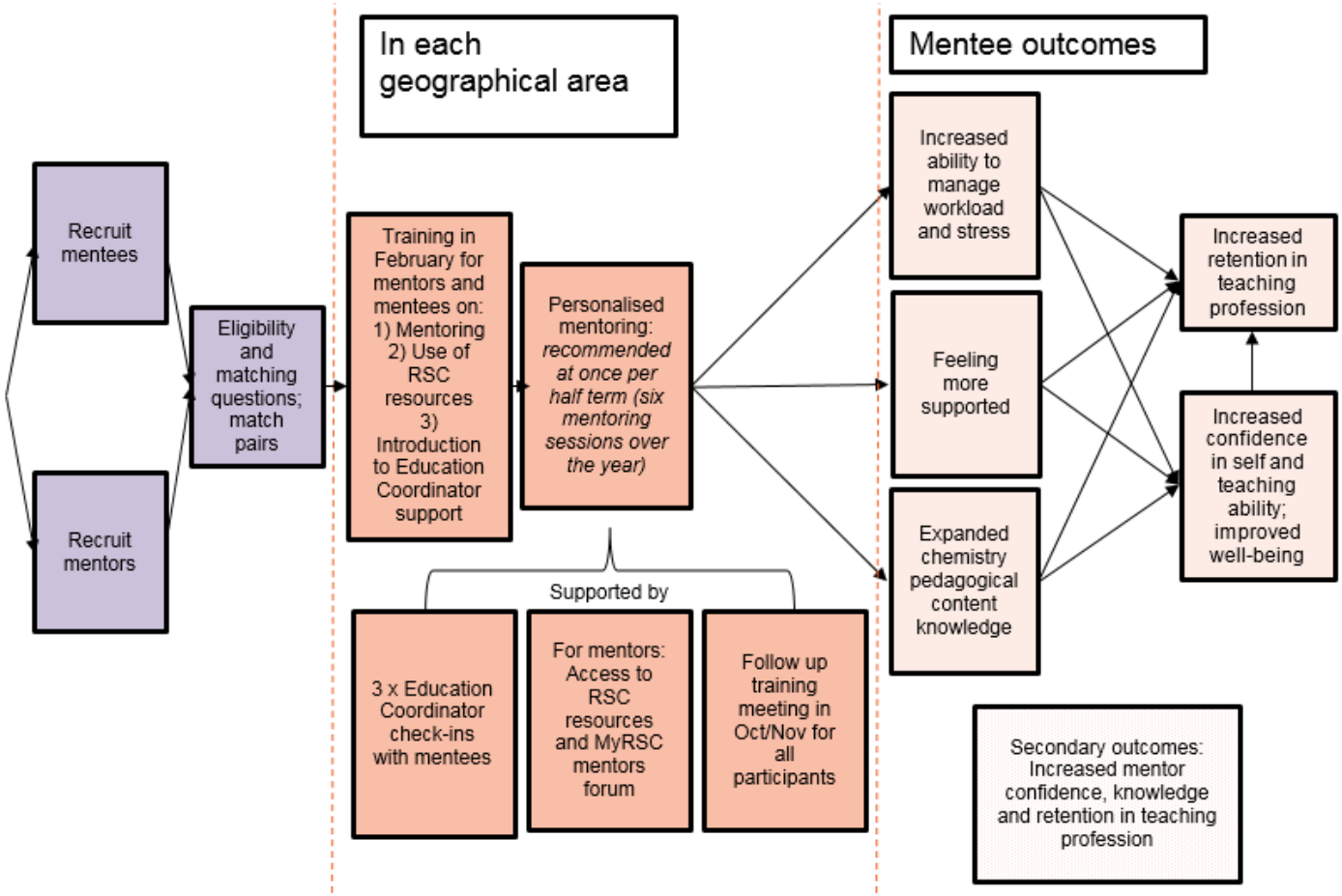
Evaluation plan version history

VERSION	DATE	REASON FOR REVISION
1.0 [*original*]	13/03/2019	*[leave blank for the original version]*

Intervention

Theory of Change

The Theory of Change diagram below provides an overview of the intervention. Created by the Royal Society of Chemistry (RSC), it outlines the main changes the Mentoring for Early Career Chemistry Teachers pilot seeks to make, and the steps that are expected to be involved in making those changes happen. A full description of the intervention is provided in the TiDieR framework overleaf.



TIDieR framework

1. Brief name
Mentoring of Early Career Chemistry Teachers (MECCT).

2. Why (rationale/theory)
As the Department for Education has acknowledged, research has shown that mentored teachers are less likely to leave the profession (Ingersoll & Kralik, 2004). Based on mentoring best practice identified by the Gatsby Foundation (Hobson *al.,* 2012), the mentoring model pairs early career chemistry teachers with specialist external mentors to boost teacher confidence, expand chemistry pedagogical content knowledge and help teachers of chemistry feel more supported. This aims at improving their retention directly by giving teachers a sense of success (Johnson & Birkeland, 2003) as well as improving their ability to manage workload and stress, which are main causes of teachers leaving the profession. The Royal Society of Chemistry (RSC) ran a pilot of chemistry mentors in Scotland, which was evaluated by the Robert Owen Centre for Educational Change (Halls *et al.,* 2018). The evaluation found indicative evidence of a positive impact on many teachers' intentions to remain in the profession. This project provided a basis for this trial, but also prompted some changes to the design of the intervention, as summarised below.

Stage	Current practice (Scottish trial)	Change	Reason
Measurement of impact	Pre and post-mentoring questionnaires to mentors and mentees sent out by RSC	Some of this information will be collected and tracked by NFER	NFER are the external evaluators; to reduce the workload of participants, information will only be gathered once
Contact with RSC	Mainly operational support via the mentoring manager	Education coordinators will receive mentoring training Dedicated shared inbox set up to act as single point of enquiry	To help with recruitment and ongoing enquiries To ensure participants receive appropriate support at short notice
In-person training	Training day - run over one day. Half-day in morning just for mentors, mentees joining in afternoon. Some pairs matched later.	Pairs will be introduced to each other at the training day. A back-up training day will be arranged and only publicised if necessary.	In response to evaluation of Scotland mentoring 2017–18. To increase likely availability of participants
Further training	Ad hoc support from RSC on ongoing basis	A face-to-face check-up meeting will be held for mentors and mentees in Oct/Nov 2019.	To offer additional support and encourage further mentoring
Monitoring mentoring	Self-reporting at end of mentoring project	Fidelity log – online portal where mentors upload record of mentoring sessions	More reliable as it is filled out after each session

3. Who (recipients)

Mentees will be teaching chemistry at Key Stage 3 and/or Key Stage 4 and have qualified teacher status (QTS). The pilot is open to both subject specialist and non-specialist teachers of chemistry in years one to five of their teaching career. Mentees will be teaching at least five hours of chemistry in an average school week. It is anticipated that the mentors (subject specialist teachers of chemistry with five or more years' experience) will also benefit from the programme.

4. What (materials)

Mentors will be provided with the 'Support for mentors' handbook to support individual mentoring sessions. This 22-page document covers eleven key areas identified as important to ECTs and mentors by the RSC[1]. Guidance on teacher mentoring will be provided to mentors at an initial training session led by a mentoring professional, as well as through the private mentor forum on MyRSC and a second training day. The RSC will proactively support mentors and mentees in the eleven areas mentioned above, while also supporting mentoring pairs to explore other issues that may emerge. Where practical materials (materials for use in school) are required by mentees, mentors should not need to develop their own resources as they can direct mentees to existing RSC materials.

Mentors and mentees will be able to apply to RSC for reimbursement of up to £300 to cover costs associated with mentoring (e.g. supply cover). This is for teacher attendance at mentoring sessions, not teacher attendance at training. A one-off payment will be made to participants on request.

5. What (procedures)

The RSC will provide mentors with the skills required to implement flexible and personalised mentoring at the training sessions taking place at the start of the programme year (February 2019). This training and support covers: defining mentoring, setting goals, questioning skills and planning at each stage of the mentoring cycle from initiation to close. A second training session in October/November 2019 will support and monitor the mentoring programme and will include a focus on refreshing questioning techniques and closing the relationship. Mentees will be present at the initial training day to understand the mentoring process, meet their mentor, network with their peers and receive the mentoring resource pack, which contains a slide pack, the 'Support for mentors' handbook, and example questions and exercises. In addition to the two training days, the education coordinators (see below) will check -in with the mentees via email every term (three times in total) to ensure everything is running smoothly and that they are happy with the support being provided. The education coordinators are also able to direct mentees to resources, including RSC resources, on request. Mentors will be given access to other support materials including access to a mentors' forum on the online platform MyRSC. The RSC will also monitor a mailbox set up for ad hoc queries/support.

The mentoring sessions will proceed on an individual basis for each mentor pair. There is an expectation that each pair complete at least one, one-hour long face-to-face session per half term (minimum of six over the course of the intervention). The content, delivery and style of the sessions will be unique to each pair and stage of their mentorship.

6. Who (implementers)

Mentoring will be delivered by subject specialist teachers of chemistry with five or more years' experience. Mentors may be serving or former teachers.

The intervention follows a 'train-the trainer' model, whereby mentors will be trained and supported by a mentoring professional and their local RSC Education Coordinator.

The mentoring professional will use their experience of setting up mentoring relationships to: 1) design and produce appropriate training and ongoing support for participants in the mentoring scheme; and 2) ensure that recruitment materials are consistent with planned training and support for participants in the mentoring scheme. They will also: produce webinars to provide an overview of the

[1] These areas are: 1) the role of a mentor; 2) classroom and behaviour management; 3) time and workload management; 4) lesson planning, paperwork and bureaucracy; 5) pedagogical approaches; 6) assessment approaches; 7) career progression; 8) day-to-day teacher experiences; 9) pastoral support; 10) interacting with other stakeholders; and 11) chemistry practicals.

mentoring scheme prior to participants signing up; pair participants into mentee-mentor pairs; schedule and arrange training days for mentors and mentees; and address issues with the mentoring scheme or individual mentoring relationships as they arise, for example re-pairing.

The education coordinators, of which there will be two, will be RSC staff based regionally. They will use their relative proximity to schools in their region, as well as their knowledge and contacts with educational stakeholders, to help deliver several key aspects of the mentoring scheme, particularly: 1) recruiting mentors and mentees by promoting the mentoring scheme; and 2) providing ongoing support to mentors and mentees. This includes ad hoc support, whether participants contact them directly or via the mentoring@rsc.org inbox, as well as scheduled termly catch-ups.

7. How (mode of delivery)

Teachers will be recruited by advertising through the RSC's local network of teachers using the RSC's regular newsletter, as well as by proactively approaching teachers known to the Education Coordinators via the Learn Chemistry Partnership (approximately 60 per cent of schools in any area are involved). Schools and mentors/mentees will cosign a Memorandum of Understanding (MoU) as part of signing up to the intervention. Both mentors and mentees will be asked to complete an online questionnaire including questions about their teaching/mentoring experience, expectation of the scheme, and personalities and interests. Survey responses will be reviewed by an experienced mentoring professional and the RSC will conduct phone interviews with any teachers where they have questions around their motivations or commitment to the programme. Teachers will then be manually matched based on factors including personalities and interests, geographical proximity, years in teaching, age and experience. A successful pairing will have excellent rapport and progress towards the personalised objectives set by the mentee.

The first training sessions with mentors are face-to-face whilst the second training sessions can be face-to-face or as a webinar. The RSC train mentors to be non-directive and focused on career support rather than being instructive or directive, or solely offering emotional support.

The RSC will monitor the relationships via personal check-ins with mentees and mentors via email every term. The RSC will also monitor a mailbox set up for ad hoc queries/support.

The local Education Coordinator's role will be to advise mentees and mentors and resolve issues if they arise. They will have received mentorship training themselves (distinct from the mentoring training provided to mentors in this programme) in order to do so, and will also have the support of mentoring professional colleagues at the RSC's Head Office. They will also integrate the participants into the existing network of regional teachers and chemistry-teaching events taking place throughout the academic year. Mentees and mentors will organise their mentoring to suit their schedules and mentee's needs alongside their routine teaching throughout the year.

8. Where (setting)

The two initial training sessions are due to take place in February 2019 at Murray Edwards College, Cambridge and College Court Conference Centre, Leicester. A third training day for those who could not make the first two sessions is scheduled to take place in central London in April 2019.

Mentoring sessions can take place inside and outside of school, ideally face-to-face (the first training session will be face-to-face), but also via Skype, phone, email and other forms of social media.

9. When and how much (dosage)

The programme is due to run from February 2019 to March 2020. The RSC expect mentor pairs to meet six times over the course of the year for up to an hour each time. The exact number of meetings is expected to vary depending on the mentees' preferences. Communication will ideally take place face-to-face, but can also take place via Skype, phone, email and other forms of social media. Some interactions are expected to be scheduled while others will be ad hoc.

10. Tailoring

Beyond the minimum expectation of six interactions over the year, each mentoring pair will tailor the intensity and content of their mentoring to match the mentees' needs.

11. How well (planned)

Strategies to maximise implementation effectiveness include approximately five hours of initial training for mentors and two hours for mentees in February 2019. A second training session (face-to-face or via webinar) will be held for mentors in October/November 2019 for up to three hours. These sessions will be supplemented by a rolling programme of support and assistance for mentors and mentees (e.g. through. for example, termly email contact, the mentoring inbox for mentees and ad hoc support) from two trained local Education Coordinators.

Methods

Research questions

1. Evidence of promise

a) Do ECTs and mentors agree that there is a need for the intervention and that it focuses on the right areas of support (e.g. the eleven identified areas)?

b) Is there preliminary evidence that the intervention has impacted positively on ECTs?

i. Is there preliminary evidence that the intervention is improving ECTs' confidence, knowledge, practice and sense of success?

ii. Is there preliminary evidence that the intervention is improving ECTs' ability to manage workload and stress?

iii. Do ECTs feel more supported?

iv. Is there preliminary evidence that the intervention has encouraged ECTs to stay on in teaching for the next five years?

v. To what extent would these outcomes have occurred in the absence of the intervention (additionality)?

c) How, if at all, do outcomes vary by ECTs' characteristics (e.g. prior experience of teaching chemistry and length of time in teaching)? This information will be captured as part of the baseline survey and telephone interviews with participants.

d) Is there preliminary evidence that the intervention has impacted positively on mentors (e.g. by supporting them to develop their coaching/mentoring skills and progression prospects)? To what extent would these outcomes have occurred in the absence of the intervention (additionality)?

e) Do there appear to be any unintended consequences (e.g. mentor improved progression prospects) or negative effects (e.g. increased workload, mentors feeling ill-equipped to support their mentee) associated with the intervention? Does the intervention displace existing activity?

f) Is there evidence to support the intervention logic model or theory of change? For example, does mentoring lead to reduced workload and/or mentors feeling better supported, which in turn is likely to lead to better retention?

2. Feasibility

a) Is the intervention feasible to deliver? For example, can the RSC recruit the necessary mentors and ECTs, effectively match mentors and ECTs, deliver training and provide support materials, and support the successful delivery of mentoring (i.e. to achieve intended outcomes) within the time allotted?

b) Has the matching process been successful? What are the key success factors? What could be improved?

c) What type and level of support to ECTs has been most effective? Have mentors undertaken the minimum of six interactions with the mentees over the year? Is this level of support appropriate? What other support has been provided? What types, levels and combinations of support have been the most effective? How could support be improved?

d) Has the mentor/mentee training been effective in developing a mentoring approach and helping mentors understand how to facilitate sessions? How effective was the first training session? How effective was the second session? What proportion of mentors attended the second session face-to-face and via webinar? What were the pros and cons of attending the second session face-to-face or via webinar?

e) Is the intervention reaching its intended target population (i.e. both specialist and non-specialist chemistry teachers in the first to fifth year of teaching)?

f) Are all recipients engaged during the delivery of the intervention? Are there any barriers to engagement (e.g. senior leader support, workload, time)? How, if at all, have these been overcome?

3. Readiness for trial

a) What can be learned from the above to take to the next stage of evaluation? For example, do changes need to be made to: the intervention theory; matching; content, delivery mode and level of support provided to ECTs; training and support for mentors; intervention materials; project management?

b) Are there any key contextual factors that appear to facilitate or impede successful implementation (e.g. related to mentors', ECTs' and schools' characteristics/circumstances)?

c) Is the intervention considered to be affordable by schools? Do schools give mentees and mentors dedicated time to meet with or speak to one another? To what extent do schools feel it is feasible to provide such opportunities?

d) Is the intervention sufficiently well manualised such that it can be readily scaled up into a larger trial if required?

Data Collection Method	Research Question	Indicator
Paper Baseline and Endpoint Survey	**1a,c,2e,3a,b,d**	Mentees identified areas of need/improvement
	1bi,ii,iii,c,e,2c,3a,b	Qualitative change in self-reported confidence levels
	1bi,iv,c,e,2c,3a,b	Self-reported intention to remain in teaching
Fidelity Log	**1c,e,2b,c,f,3a,b,d**	Evidence of regular mentor/mentee interaction
	1a,d,2b,c,d,3a,b,d	Reported content of mentoring sessions
Participant Interviews	**1bi,ii,iii,iv,c,d,e,2c,3a,b**	Self-reported change in confidence levels
	1a,c,e,2b,c,d,f,3a,b	Description of sessions
	1bv,e,2c,f,3a,b	Descriptions of other interventions participants have been involved in
	3a,b,c	Perspective of ECT's heads of departments/line managers
Observation of training	**1e,2a,b,d,e,3a,d**	Report on content and delivery

Recruitment

The RSC will be responsible for the recruitment of mentors and mentees. They will aim to recruit 40 mentor/mentee pairs under the eligibility criteria described in section three of the TiDieR Framework above. Participants will be recruited from schools in the East of England and the Midlands. Teachers will be recruited by advertising through the RSC's local network of teachers using the RSC's regular newsletter, as well as by proactively approaching teachers known to the two Education Coordinators via the Learn Chemistry Partnership (approx. 60 per cent of schools in any area are involved). Schools and mentors/mentees will co-sign a Memorandum of Understanding (MoU) as part of signing up to the intervention (see Appendix 1). Both mentors and mentees will be asked by the RSC to complete an online pre-mentoring questionnaire, which will include questions about their teaching/mentoring experience, expectation of the scheme, and personalities and interests. Survey responses will be reviewed by an experienced mentoring professional and the RSC will conduct phone interviews with any teachers where they have questions around their motivations or commitment to the programme. Eligible teachers will then be manually matched based on their geographical proximity and responses to the questionnaire, including any specific goals or requirements they have flagged based on their responses to the pre-mentoring questionnaire and the judgment of the experienced mentoring professional and the RSC.

Data collection

IDEA workshop

In autumn 2018, NFER attended two set-up meetings and then held an IDEA workshop with the RSC to complete the TIDieR framework and discuss and agree the Theory of Change (ToC). This aimed to clarify the intervention's aims, target group, proposed content and delivery mechanisms and intended outcomes. The aims, methods and timescales for the feasibility phase were also agreed upon.

We will survey 40 mentees at both baseline and endpoint and undertake qualitative work with ten mentees, their mentors and line managers/heads of department. Further details are provided below.

Design of evaluation tools

NFER will devise a range of instruments to be tested and refined during the feasibility study. We will also work with the RSC to develop a template to capture the required monitoring data during the feasibility study, which will be adapted, as needed, for the trial.

Paper survey

We will design a paper-based **baseline and end-point survey for all 40 mentees**, to explore the effectiveness of project delivery and measure outcomes. This survey will be created and administered by NFER and will be different from the online pre-mentoring questionnaire administered by the RSC. We will hand out the baseline survey during the initial training sessions (February 2019), and collect them in before the end of the sessions. The end-point survey will be posted to each ECT (February/March 2020), and a return envelope provided. The baseline survey will include questions on areas such as: how they came to be involved in the pilot; what they hope to achieve from the pilot; their views on their current skills and abilities in teaching chemistry; and their satisfaction with teaching and future plans.

As well as exploring the type and extent of the mentoring received, the end-point survey will explore the extent to which expected outcomes for mentees, as identified in the logic model (such as an increased ability manage workload and stress, and feeling more supported), have been achieved. It will also include questions on other support and continuing professional development (CPD) teachers have received, and/or what support the intervention has replaced. This is key to exploring additionality and displacement; many schools already offer a range of support and CPD to the RSC's target group.

Given the small numbers, we will not conduct robust statistical analysis of data; rather, we will explore responses to see if they are indicative of impact on the small sample. Prior to administration of the surveys, we will pilot the questionnaires with a small sample of mentees (up to three) to explore:

clarity of instructions; the appropriateness of the questions and if any are missing; the structure and flow of the survey; and how long it took to complete (we will aim for no longer than 15-20 minutes). We will then review and refine the surveys as necessary.

Fidelity log

It will be of interest to understand the variation in the intensity and content of the mentoring received and the resulting outcomes. To do so, we will design a **'fidelity log'** to record the frequency, duration, mode, and nature of each contact between the mentor and mentee. The log will be accessible to the mentors via the online NFER portal. We recommend that the log is completed by the mentor immediately after each mentoring session, who may have more time for administrative tasks and this could be built into their role. We will gain feedback from mentors during interviews (see below) on the clarity of the tool and the ease of completion. We will analyse the data collected in the tool, to enable us to categorise 'models' of mentoring.

Qualitative instruments

We will also devise a range of qualitative instruments including interview schedules for: RSC staff, mentors, mentees, and mentees' line manager/head of department. We will also devise an observation schedule for the mentor training sessions.

Observation of training (February 2019 and October/November 2019)

The evaluation team will observe the first and second days of training for mentors during February 2019 and October/November 2019. This will ensure we gain an understanding of expectations for the mentor role and the level of engagement and enthusiasm of the mentors and mentees. Mentees will also attend the first training day at which they will be introduced to their mentor.

Qualitative telephone interviews

We will carry out telephone interviews with a range of key stakeholders, as detailed below. These will happen at different times depending on the role of the interviewee and the themes being explored.

Project manager/intervention developers from the RSC: We will maintain ongoing contact with the project manager/intervention developers from the RSC via email and telephone. This will include a formal telephone interview with the RSC project manager in autumn 2019. We will want to understand what is being delivered and to explore their views on: demand for the intervention, the success of recruitment during the feasibility phase and feasibility of recruitment for the main trial (including the possible use of incentives or time off timetable), the required characteristics and skills of mentors, the success of mentor/mentee pairing, implementation/quality of the mentoring and the emergence of different 'models' (including type/extent) of mentoring, the outcomes of the internal check-ins and online surveys completed by pairings, and perceptions of emerging outcomes, costs, and any changes required prior to trial.

RSC mentoring professional: We will interview the RSC mentoring professional who has analysed the RSC online mentor survey and conducted teacher interviews prior to matching mentors and mentees. We will discuss the manual matching process and their views on the success of the pairings and any changes needed to the process.

RSC trainers: After the first and second training days for mentors/mentees, we will interview two trainers to gather their views of how the training went, what worked well and what enhancements are needed. We will also review data from any feedback forms administered to the mentors and mentees by the trainers.

Local RSC Education Coordinators: We will interview the two Education Coordinators to explore their views on the training they received to help them support mentors, what has worked well and what could be improved, the nature of the support that mentors have requested and how this has worked, and costs incurred.

Triangulated telephone case studies with ten of the 40 recruited mentee and mentor pairs and mentees' line manager/head of department (30 interviews, ten of each stakeholder): We will undertake interviews with ten mentees and their mentor and line manager/head of department. This will enable us to triangulate data from all three consultees to gain an understanding of delivery effectiveness and emerging outcomes. The ten case studies will be selected in discussion with the EEF and RSC. However, it is likely that cases will be sampled to include different:

- school-level characteristics (e.g. schools with different proportions of pupils eligible for free school meals, attainment and/or size)
- ECT characteristics (e.g. we will want to include teachers in years one to five of their teaching careers)
- geographical locations (e.g. five cases in the East of England and five in the Midlands).

In terms of mentees and mentors, we will want to understand their reasons for participating, the nature of the mentoring activities provided (frequency, duration, purpose), quality of provision and what has worked well, any barriers to implementation, perceived early outcomes and likely future impact of the intervention on both mentees and mentors, financial and in-kind costs incurred, and any suggestions for changes. We will ask mentees what other CPD and support they have received alongside the intervention, as well as what they would have received if they had not taken part (e.g. 'business as usual'). We will consult with line managers/heads of department in order to gain an external perspective on the impact of mentoring, including on mentees' subject knowledge, pedagogical knowledge, classroom management, teaching practice, confidence and motivation, career progression, and likely retention in teaching. We will also explore 'spin-off' outcomes for other teachers and the CPD/support that other ECTs not taking part in the intervention are receiving (i.e. 'business as usual) and the more general accessing of RSC resources and CPD.

Data analysis

We will triangulate the qualitative data gathered from the three different stakeholder groups interviewed as part of the case studies to build a picture of the success of the intervention from different viewpoints. We will analyse interviews thematically, exploring different types of delivery, how mentoring works in different school contexts, and whether views differ according to the different characteristics and experience of mentors and mentees. These findings will be used to address each of the research questions outlined above.

Outcome of the feasibility phase

We will produce PowerPoint slides of the findings and present them at a workshop with EEF and RSC in March 2020. The longer-term aim is to run an efficacy trial or QED as part of a scaled-up intervention, and the presentation of findings will include a discussion of the implications for the design of such a study. The primary aim of the main trial will be to evaluate the impact of the intervention in retaining chemistry teachers in state schools. This could be measured using School Workforce Census (SWC) data in the second year after the intervention. Should the evaluation not proceed to a trial or a QED, we will produce a draft report of the feasibility findings in May 2020.

Ethics and registration

The evaluation will be conducted in accordance with NFER's Code of Practice; further details are available at https://www.nfer.ac.uk/media/1166/codeofpractice.pdf

Agreement for participation in the study will be provided by the participating mentors and mentees and a senior school leader. This will be collected by the RSC using a Memorandum of Understanding (MoU), which all schools/mentors/mentees sign as they join the programme. Participants will be provided with full details about the intervention and will be given the opportunity to withdraw their data from data processing if they have objections to this.

Data protection

NFER and the RSC are joint Data Controllers and Processors for this project. They will jointly decide on the means and purposes of processing personal data in order to effectively deliver and evaluate the programme. For example, the RSC will use participants' responses to the pre-mentoring questionnaire to match mentors to mentees. Data collected by NFER will be used to evaluate the RSC's mentoring programme in line with the aims of the evaluation above.

All data gathered during the study will be held in accordance with the General Data Protection Regulation (GDPR, 2018), and will be treated in the strictest confidence by the NFER, EEF, and the RSC. Research data collected by NFER will not be made available to anyone outside of those parties listed. Should the evaluation not proceed to a trial or a quasi-experimental design, we will produce a report for publication based on anonymised findings. This will be made available to the general public, including the RSC and EEF. No individual participant's views or responses will be identifiable from the reports NFER will write. Our legal basis for gathering and using this data is legitimate interest, through our work as a research organisation. In the event that data subjects should share information that could be regarded as special personal data relative to their health or mental health, Article 9 of GDPR will apply and the lawful exemption for processing this data will be explicit consent. Consent will be collected by the RSC as part of their pre-mentoring questionnaire.

For further information, please see the Privacy Notice for the programme, available at https://www.nfer.ac.uk/media/3259/privacy_notice_for_mentoring_for_early_career_chemistry_teachers.pdf

Personnel

Name	Institute	Roles and responsibilities
Suzanne Straw (SS)	NFER	Project Director, responsible for leading the NFER team and for quality assuring evaluation delivery.
Matt Walker (MW)	NFER	Project leader, responsible for overseeing the day-to-day running of the feasibility study.
Kathryn Hurd (KH)	NFER	Head of Survey Operations, responsible for overseeing the administration of the survey.
Luke Blackburn (LB)	RSC	Programme Coordinator, responsible for overseeing the day-to-day running of the programme.
Mark Jordan (MJ)	RSC	Lead developer, responsible for delivery of the programme and quality assurance.
Laura Woodward (LW)	RSC	Careers specialist, responsible for delivery of the programme.

Risks

Risk	Assessment	Countermeasures and contingencies
RSC unable to recruit 40 mentor and mentee pairs.	**Likelihood**: medium **Impact**: moderate	The feasibility study was designed to work with 10 mentor/mentee pairs and would still provide useful data if the RSC only recruited to these numbers. If the recruitment window needed to be extended, some participants could be involved for less than 12 months and still take part in the evaluation.
Intervention is not clearly defined	**Likelihood**: medium **Impact**: moderate	The mentoring is designed to be personalised to have maximum impact on mentees, but this makes impact evaluation difficult. The feasibility study will explore different types of implementation (e.g. different frequencies of sessions, different modes of interaction) and suggest models of delivery for the follow-on trial/QED.
Low levels of participation amongst mentors and mentees in evaluation activities.	**Likelihood**: low **Impact**: moderate	Clear information/briefings with mentors/mentees will explain the purpose and aims of the evaluation. To maximise response rates, baseline questionnaires will be handed out and gathered in at training events. The RSC will encourage participants to engage in evaluation activities.
Delays in training sessions and commencement of mentoring.	**Likelihood**: low **Impact**: moderate	This will mean some participants will not get the full 12 months of the intervention. However, baseline and endpoint surveys will be as spread out as possible to maximise the likelihood of detecting outcomes. Findings can be analysed by duration of training to help isolate any effects resulting from having a shortened period of mentoring.
Researchers lost to project due to sickness, absence or staff turnover.	**Likelihood**: low **Impact**: moderate	NFER has a large Research Department allowing for staff with similar skills to be re-deployed to the project. Project activities are documented to support the smooth continuation of the evaluation.

Timeline

Dates	Activity	Staff responsible/ leading
August-September 2018	Project set-up	All
October-December 2018	Recruitment for the feasibility study IDEA workshop and NFER interview with the developers Design of NFER baseline survey RSC's online questionnaire developed RSC administer MoUs	LB/MJ MW/SS/LB/MJ MW/SS LB/MJ LB/MJ
January 2019	RSC administer pre-mentoring questionnaire RSC continue to administer MoUs NFER baseline survey piloted Commence design of fidelity log and interview schedules Matching of mentees and mentors	LB/MJ LB/MJ MW/SS MW/SS LB/MJ
February 2019	RSC continue to administer MoUs Continue matching of mentees and mentors RSC continue to administer pre-mentoring questionnaire Initial two training days NFER baseline survey administered Observation of training sessions and interviews with one or two trainers First mentoring sessions Fidelity data collection commences Commence interviews e.g. mentor professionals/trainers during/after training sessions Interview with RSC mentoring professional to discuss matching process	LB/MJ LB/MJ LB/MJ LW/LB/MJ MW/SS/KH MW/SS RSC mentors RSC mentors MW/SS MW/SS
April 2019	'Mop-up' training day NFER baseline survey administered	LW/LB/MJ MW/SS/KH
September-December 2019	Continue with mentoring fidelity logs	RSC mentors MW/SS

Dates	Activity	Staff responsible/ leading
	Interviews with the two Local RSC Education Coordinators Interview with one or two trainers after follow-up training webinar Interview with project manager/intervention developers from the RSC Telephone interviews in 10 schools with ECTs, external mentor, and school-based line manager/ Head of Department	MW/SS MW/SS MW/SS
January-March 2020	Endpoint survey administered (February-March) Commence analysis of evaluation data Intervention ends (March) Presentation of findings (March)	MW/SS MW/SS LB/MJ MW/SS
May	Submission of draft report (if required)	MW/SS

References

Hobson, A.J., McIntyre, J., Ashby, P., Hayward, V., Stevens, A. and Malderez, A. (2012). *The Nature, Impact and Potential of External Mentoring for Teachers of Physics and Other Subjects In England: Full Report.* London: Gatsby Charitable Foundation. [online]. Available: www.gatsby.org.uk/~/media/Files/Education/Gatsby%20%20Impact%20of%20Mentoring [8 February, 2019].

Hall, S., Lowden, K., Lusk, D. and Bravo, A. (2018). *Evaluation of RSC Mentoring Scheme: Final Report*. Unpublished. Robert Owen Centre for Educational Change. University of Glasgow.

Ingersoll, R. and Kralik, J. M. (2004). *The Impact of Mentoring on Teacher Retention: What the Research Says*. Denver, CO: The Education Commission of the States.

Johnson, S. and Birkeland, S. (2003). 'Pursuing a "Sense of Success": New Teachers Explain Their Career Decisions', *American Educational Research Journal*, **40**, 581-617 (DOI: https://doi.org/10.3102/00028312040003581) [online]. Available: https://journals.sagepub.com/doi/10.3102/0002831204000358 [8 February, 2019].

Appendix 1 – Memorandum of Understanding

Agreement to Participate in the Mentoring for Early Career Chemistry Teachers Programme and Evaluation
Memorandum of Understanding (MoU) and Information Sheet

Please sign two copies of this MoU, retaining one and providing one to your Royal Society of Chemistry (RSC) representative:

- *Heidi Dobbs, Midlands, dobbsh@rsc.org*
- *Rizwana Alvi, East of England, alvir@rsc.org*

Alternatively, please scan and email this agreement to mentoring@rsc.org

Aims of the programme:

The Education Endowment Foundation (EEF) and the Wellcome Trust have provided grant funding for the Royal Society of Chemistry (RSC) to deliver the Mentoring for Early Career Chemistry Teachers Programme. The programme will be evaluated by the National Foundation for Educational Research (NFER).

The programme will pair early career chemistry teachers with specialist external mentors, and aims to:

- boost participating early career teachers' confidence, expand their chemistry pedagogical content knowledge and help teachers of chemistry feel more supported
- support early career teachers to stay in teaching
- provide mentors with the skills required to implement flexible and personalised mentoring

Aims of the evaluation:

NFER's independent evaluation will explore whether:

- there is preliminary evidence that the programme has impacted positively on participating early career teachers and mentors
- the programme is feasible to deliver
- the programme is ready to be scaled up and evaluated as part of a larger scale study

What is the Mentoring for Early Career Chemistry Teachers Programme and how will it work?

The RSC will be training and matching experienced chemistry teachers to act as mentors to early career teachers of chemistry in the Midlands and East of England.

The RSC ran a similar mentoring pilot in Scotland, which was evaluated by the Robert Owen Centre for Educational Change. The evaluation found indicative evidence of positive outcomes for both mentees and mentors. The current programme primarily aims to improve mentee's confidence in their teaching and have a positive impact on their intentions to stay in the profession. The RSC plans to support 40 mentees with up to 40 mentors (one mentor can choose to mentor more than one mentee if they wish).

- Mentees will be early career teachers (ECTs) of chemistry with qualified teacher status (QTS). The programme is open to both chemistry subject specialists and non-specialists in years two to five of

their teaching career. The programme is not open to NQTs. Mentees should report teaching at least five hours of chemistry in an average school week

- Mentors will be experienced teachers of chemistry with QTS and over five years of teaching experience. They may be current or former teachers who taught/teach at least five hours of chemistry in an average school week

Both mentors and mentees will be asked to complete an online pre-mentoring survey to confirm their eligibility. The survey responses will also allow the RSC mentoring professional to manually match mentors and mentees based on their geographical proximity and responses to the questionnaire, including any specific goals or requirements they have identified.

In February 2019, the RSC will host a local, five-hour training day for mentors that will cover: defining mentoring, setting goals, questioning skills and planning at each stage of the mentoring cycle from initiation to close. Mentees will attend two hours in the afternoon of the initial training day in order to understand the mentoring programme, meet their mentor, network with their peers and be trained in navigating and using RSC resources.

The RSC expect mentor pairs to have a minimum of six mentoring sessions over the course of the year for up to an hour each time. The exact number of sessions is expected to vary depending on the mentees' preferences and their personalised objectives. Communication will ideally take place face-to-face, but can also take place via Skype, phone, email and other forms of social media. Some interactions are expected to be scheduled while others will be ad hoc.

The RSC will monitor the relationships via personal check-ins with mentees and mentors via email every term. Further support for mentors will include access to a private mentoring MyRSC forum, which will contain content and guidance on tackling the topics most commonly raised by mentees, including:

- classroom/behaviour management
- time and workload management
- dealing with paperwork and bureaucracy
- academic/theory and subject specific knowledge
- assessment approaches
- applying for teaching posts
- hearing what teaching over time actually involved
- pastoral support
- interacting with other stakeholders

The RSC will also be monitoring a mailbox set-up for ad hoc queries and support: mentoring@rsc.org.

Mentors will be expected to attend a second three-hour training session either at a face-to-face meeting or remotely via webinar in October/November 2019. This session will focus on refreshing questioning techniques and closing the relationship. We expect most mentoring relationships to have met their mentees' objectives by the start of March 2020, however teachers can continue their relationships informally if they wish.

Recruitment data collection:

You should already have completed a pre-mentoring survey that establishes your eligibility for the programme and that will allow the RSC to match you to another appropriate teacher for mentoring.

For mentees, this data includes:

- Mentees' names, years in teaching, phase of teaching, subject area, school name, address and number, email address, phone number, teaching status, whether have QTS or not, main specialist subject, hours of chemistry taught each week, and views on the programme

For mentors, this data includes:

- Mentors' names, years in teaching, phase of teaching, subject area, school name, address and number, prior mentoring experience, email address, phone number, teaching status, whether have QTS or not, main specialist subject, hours of chemistry taught each week, and views on the programme

Data protection:

For more information about how we process and store your data, you can download our Privacy Notice here: http://www.rsc.org/events/download/Document/0e52cffe-b5e7-4f6f-b1aa-a8caeffbc5a7.

NFER and the RSC are joint Data Controllers and Processors for this project. They will jointly decide on the means and purposes of processing personal data in order to effectively deliver and evaluate the programme. For example, the RSC will use your responses to the pre-mentoring questionnaire to match you with another participant. Data collected by NFER will be used to evaluate the RSC's mentoring programme in line with the aims of the evaluation above.

Mentors and mentees will:

- Attend the training day in February 2019, including the first mentoring session that afternoon
- Arrange at least five further mentoring sessions over a 12-month period – these can be via skype or telephone, although face-to-face is preferable. Ad-hoc interactions might take place via email, SMS or social media.
- If they are a mentor, complete the follow up training session in October/November 2019 either at a three-hour face-to-face meeting or via webinar
- In line with GDPR and data protection regulations, keep all personal information secure and confidential and notify us of any breaches as soon as possible
- Take part in evaluation requirements as set out below

NFER's evaluation requirements:

All participating early career teachers (ECTs) and mentors, together with their line managers/heads of departments of ten ECTs, will be expected to participate in a series of light-touch evaluation activities, where invited to do so. The main evaluation activities are described below.

Early career chemistry teachers

All early career teachers will be required to complete a short:

- baseline paper survey prior to starting the programme (February 2019)
- follow-up paper survey towards the end of the programme (February/March 2020)

In addition, up to ten early career teachers will need to:

- share their thoughts about the first training day during the day itself (February 2019)
- take part in a telephone interview as part of a school case-study, where NFER will also be talking separately to the ECT's external mentor and school-based line manager/head of department (autumn 2019)

Mentors

All mentors will be required to:

- complete a simple fidelity log on an ongoing basis, which will involve making a note of the date, duration, format and focus of each meeting/contact with their mentee

In addition, up to ten mentors will need to:

- share their thoughts about the first day of training day during the day itself (February 2019)
- take part in a telephone interview as part of a school case-study, where NFER will also be talking separately to the ECT and their school-based line manager/head of department (autumn 2019)

Early career chemistry teachers' line managers/heads of department

The line managers/heads of departments of ten ECTs will be required to:

- take part in a telephone interview as part of a school case-study, where NFER will also be talking separately to the ECT and their external mentor (October/November 2019)

Please note that no individual participants (ECTs, mentors or line managers/heads of department) or schools will be identified in any report that NFER writes

The RSC will provide:

- An initial training day in February 2019 for mentors (lasting five hours) and mentees (lasting two hours)
- A follow up training session lasting three hours in October/November 2019 for mentors, which mentors can choose to attend in person or via webinar
- Support and guidance to mentees throughout the programme through their local Education Coordinator and termly email check-ins
- Support and guidance to mentors throughout the programme through their local Education Coordinator, termly email check-ins and a dedicated online MyRSC forum containing content on topics most frequently raised by mentees
- Access to ad-hoc support via the mentoring@rsc.org inbox

Participating teachers will receive from the RSC:

- Reimbursement of reasonable travel costs to training, upon production of an original receipt and completed expense form

Participating schools will receive from the RSC:

- Reimbursement of up to £300 incurred in arranging supply cover for the participating teacher for one school day – this is for teacher attendance at mentoring sessions, not teacher attendance at training. A one-off payment will be made on request when bank details are submitted to mentoring@rsc.org

The school will:

- Release participating teachers so that they can attend the training sessions and take part in the programme
- If selected by NFER, allow teachers/managers/head of department to discuss their experiences of the programme with NFER via a telephone interview
- Ensure the shared understanding and support of all school staff for the project and personnel involved

Key dates for the programme and evaluation

Dates	Programme activities	Evaluation activities
29 January 2019	Recruitment closes	
12 and 26 February 2019	Initial training days scheduled *(teachers will only need to attend one meeting)*	Baseline survey of early career teachers during training days Observation of initial training session
	Mentees and mentors co-ordinate their own mentoring sessions (at least 6 between February 2019 and February 2020)	Mentors complete fidelity log provided by NFER on an ongoing basis
May 2019	Termly check in email sent	
October/November 2019	Termly check in email sent Second mentor training session scheduled or attended via webinar	School telephone case studies
January 2020	Termly check in email sent	
February 2020		Endpoint survey of early career teachers

Please sign two copies of this MoU, retaining one and providing one to your Royal Society of Chemistry (RSC) representative:

- *Heidi Dobbs, Midlands, dobbsh@rsc.org*
- *Rizwana Alvi, East of England, alvir@rsc.org*

Alternatively, please scan and email this agreement to mentoring@rsc.org

We commit to the Mentoring for Early Career Chemistry Teachers Programme as detailed above.

Participating teacher:

Signed:..... Date:.....

Name:..... Role: .....

Headteacher:

Signed:..... Date:.....

Name:.....

School: ..... School postcode:.....